(19) World Intellectual Property Organization

International Bureau



(43) International Publication Date 10 February 2005 (10.02.2005)

PCT

(10) International Publication Number WO 2005/013377 A1

- (51) International Patent Classification⁷: H01L 31/0352, 31/0248, C30B 15/00, 21/06
- (21) International Application Number:

PCT/US2004/023869

- (22) International Filing Date: 26 July 2004 (26.07.2004)
- (25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/490,125

25 July 2003 (25.07.2003) US

- (71) Applicant (for all designated States except US): GE EN-ERGY (USA) LLC [US/US]; 231 Lake Drive, Newark, Delaware 19702 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): JONCZYK, Ralf [DE/US]; 12 Glenberry Drive, Wilmington, Delaware 19808 (US). KENDALL, Scott L. [US/US]; 317 Baker Drive, Lincoln University, Pennsylvania 19352 (US). RAND, James A. [US/US]; 209 Evergreen Court, Landenberg, Pennsylvania 19350 (US).

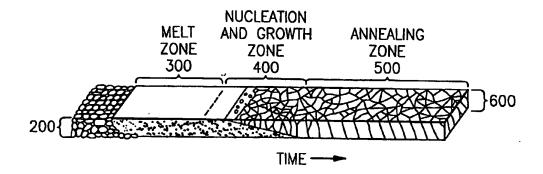
- (74) Agents: BROWN, Kevin C. et al.; Burr & Brown, P.O. Box 7068, Syracuse, New York 13261-7068 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: SEMICONDUCTOR ELEMENTS HAVING ZONES OF REDUCED OXYGEN



(57) Abstract: There is provided a structure comprising semiconductor material (600), the structure having at least one zone of reduced oxygen concentration, such zone having an interstitial oxygen concentration of not greater than 3 x 10¹⁷ oxygen atoms/cm³, such zone extending at least 75 microns in depth from a first major surface. There is further provided a photovoltaic cell comprising at least one such structure.

